Overgeneral Memory as an Emotion Regulation Strategy

A Senior Honors Thesis

Presented in partial fulfillment of the requirement for graduation *with research distinction* in Psychology in the undergraduate colleges of the Ohio State University

by

Katherine Muenks

The Ohio State University
May 2010

Project Advisor: Professor Michael Vasey, Department of Psychology

Abstract

Studies have shown an association between depression and overgeneral memory (OGM), which is characterized by difficulty remembering specific details about one's autobiographical memory. One hypothesis as to why reduced autobiographical memory specificity is related to depression is that it functions as an affect-regulation strategy and is a form of cognitive avoidance. This theory posits that OGM will be associated with maladaptive ways of regulating emotion, especially strategies related to avoidance and non-acceptance of negative emotions. In one small study (N=68) to date, associations were found between OGM and a small number of measures tapping experiential avoidance and thought suppression (Hermans et al., 2005). This study sought to replicate the findings of Hermans et al. (2005) in a larger sample using an expanded set of measures. The present study used 125 college students who, as subjects in part of a larger study, completed self-report measures. We found some significant correlations between number of non-specific responses on the Autobiographical Memory Test and measures of avoidance. We also found evidence for a mediational model in which avoidance mediates the relationship between OGM and depression. The results provide support for our hypothesis and enhance confidence in the findings of Hermans et al. (2005). This knowledge can potentially be applied to mindfulness-based treatments of depression that encourage acceptance and focus on diminishing tendencies toward avoidance.

Introduction

Autobiographical memory refers to one's memory of personally experienced past events. It is important for social functioning, orientation and knowledge of oneself, and pursuit of goals. Difficulty retrieving specific memories from one's autobiographical knowledge base is termed *overgeneral memory* (OGM; Williams, Barnhofer, Crane, Hermans, Raes, Watkins, & Dalgleish, 2007). Individuals who have tendencies toward OGM may, for example, have trouble remembering a specific time when they were "lonely" and may say something non-specific like "I am lonely every time my roommates go home for the weekend" rather than a specific memory such as "I was lonely last Friday night after my boyfriend and I got into an argument." This phenomenon has been observed in many clinical groups (e.g., Croll & Bryant, 2000; Mackinger, Loschin, & Leibetseder, 2000; Mackinger, Pachinger, Leibetseter, & Fartacek, 2000; Scott, Stanton, Garland, & Ferrier, 2000; Goddard, Dritschel, & Burton, 1997; Moffitt, Singer, Nelligan, Carlson, & Vyse, 1994; Ramponi, Barnard, & Nimmo-Smith, 2004). The first study to look at OGM examined aspects of autobiographical memory in individuals who had attempted suicide by overdose (Williams & Broadbent, 1986). The study used a cue-word paradigm in which 10 cue words, each names of positive or negative emotions, were used to generate autobiographical memories. They found that suicide attempters produced more nonspecific memories for both positive and negative cue words than did a clinical non-overdose control group and a nonclinical control group.

Another study found that difficulty retrieving specific autobiographical memories is associated with failure to recover from Major Depressive Disorder (MDD; Brittlebank, Scott, Williams, & Ferrier, 1993). Twenty-two patients diagnosed with MDD completed questionnaires measuring depression and OGM at three time intervals: at baseline, three months, and seven months. At seven months, only one of the nine participants in an "overgeneral to positive cues"

group had recovered from MDD whereas eight of the ten in the “specific to positive cues” group had recovered. Overgeneral recall, therefore, predicted outcome at a seven-month follow-up. This suggests that OGM may be a predictor of which individuals will respond poorly to treatment and therefore may be a trait marker of vulnerability to persistent depression. OGM has also been associated with difficulty imagining the future, which may exacerbate depressive symptoms (Williams, Ellis, Tyers, & Healy, 1996). In this study, suicidal patients generated less specific autobiographical memories and possible future events than did nondepressed controls.

In addition to depression, OGM has also been associated with trauma. Kuyken and Brewin (1995) suggested that an individual’s amount of negative life experiences already stored in memory may affect depressed patients’ specificity of autobiographical memories. Depressed patients who reported childhood sexual abuse generated more overgeneral memories to positive and negative cue words than did depressed patients who did not report childhood sexual abuse. With or without trauma, OGM’s relation to depression clearly indicates the benefits of studying this phenomenon.

Though a large number of studies have found significant associations between OGM and depression, some studies have failed to replicate this finding (e.g., Kaney, Bowen-Jones, & Bentall, 1999; Iqbal, Birchwood, Hemsley, Jackson, & Morris, 2004). Nevertheless, the overwhelming finding is that OGM and depression are related, though it is still unclear why this connection exists. Williams et al. (2007) posits the CaR-FA-X theory, which suggests that there are three different, though non-mutually exclusive mechanisms that contribute to overgeneral memory: *capture and rumination* (CaR), *functional avoidance* (FA), and *reduced executive control* (X). This study is concerned specifically with *functional avoidance*, which is defined as an emotion regulation strategy that reduces negative affect by limiting access to specific details

of potentially emotional material. The idea of functional avoidance is consistent with Conway and Pleydell-Pearce's (2000) model of autobiographical memory. Conway and Pleydell-Pearce (2000) suggested that autobiographical memory is closely linked to an individual's sense of self and the guidance of goal-directed activity. What an individual remembers and how he or she remembers it is determined by its degree of relatedness to goals and values of the individual. Therefore, memories that are not directly relevant to present goals will not be stored in a person's autobiographical knowledge base. Likewise, memories that are relevant to goals but that dispute a person's sense of self or conflict with self-coherence will not be integrated into the individual's long-term sense of self. If a person experiences a traumatic episode which threatens that person's current plans or goals, he or she will either fail to encode the experience or fail to integrate the experience with the knowledge base. Those who have overgeneral memories truncate their search for a specific memory prematurely because they do not want to be confronted with the sensory, perceptual, and affective features of an experience, especially if it disrupts focus on a current goal pursuit. When retrieving even neutral events from autobiographical memory, an individual who has experienced a traumatic event may find that event specific knowledge brings about negative affect. Therefore, functional avoidance works if it is not only applied to negative memories, but all memories in general.

Individuals who are depressed or traumatized use a less specific retrieval style because it works to temporarily relieve them of short-term affective disturbance. In some cases, having an overgeneral memory is protective in the short-term. An experimental study by Raes, Hermans, Decker, Eelen, & Williams (2003) was consistent with this hypothesis. The experimenters found that mood disturbance when completing a frustrating puzzle task was higher in those with a specific retrieval style. Low-specific individuals were less frustrated and scored lower on a self-

report measure of unpleasantness. This provides evidence that individuals with a less specific retrieval style are less emotionally aroused by a negative personal experience. Although OGM may be protective in the short term to reduce negative affect, long term tendencies toward avoidance and non-acceptance of emotion can be damaging.

Associations have been found between tendencies toward avoidance and OGM with the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979). The IES is a 15-item scale that measures current subjective stress that is commonly associated with PTSD. There are two subscales, Intrusion and Avoidance. Kuyken and Brewin (1995) found that higher scores on the Avoidance subscale were significantly related to the retrieval of overgeneral memories to both positive and negative cues. Also, patients with high levels of avoidance of abuse-related memories retrieved more overgeneral memories than patients without these high levels of avoidance. This provides support for the emotion-regulation hypothesis of OGM, in that individuals who report using more avoidant strategies also retrieved more overgeneral memories.

Hermans et al. (2005) suggested that those who have overgeneral memory will also rely on a more avoidant style in dealing with thoughts, feelings, problems, and situations in general. Correlations were found between the number of specific responses on the AMT and scores on questionnaires measuring experiential avoidance and thought suppression, including the Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004), the Cognitive-Behavioral Avoidance Scale (CBAS; Ottenbreit & Dobson, 2004), and the White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994). Those who generated less specific autobiographical memories reported using more avoidant coping methods to deal with negative emotions, which is consistent with past literature. This particular study, however, has several limitations and is therefore in need of replication and extension. First, it used a very small sample

size (N=68) with an overwhelming majority of women (47). Second, it did not look at the association between depression and OGM. This association, since it is a robust finding, may indicate whether the written version of the Autobiographical Memory Test used in this study is a valid test of OGM. Because this study is one of the first to use a written version—most previous studies used a face-to-face interview version of the test—it still needs to be established whether or not this version can be used in the future. The fact that we do not know whether or not the AMT in Hermans et al. (2005) is associated with depression is a major concern. It is difficult to make any further conclusions about OGM being related to avoidance if the basic finding of the AMT's correlation to depression is not found. Lastly, Hermans et al. (2005) only looked at three measures of avoidance.

The present study sought to replicate and extend the findings of Hermans et al. (2005) in a larger sample using an expanded set of measures. The study had four aims. First, we wanted to determine whether our written version of the AMT was legitimate by looking at the association between the AMT and the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) to see if we can replicate the basic finding of a relationship between OGM and depression. Second, we wanted to replicate the findings of Hermans et al. (2005), including finding significant correlations between the AMT and the Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004), which measures experiential avoidance, and the White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994), which measures thought suppression. Third, we sought to extend these findings by looking at three more questionnaires, including the Facets of Mindfulness Questionnaire (FMQ; Baer et al., 2006), the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), and the Thought Control Questionnaire (TCQ; Wells & Davies, 1994). There are various subscales on each of these questionnaires measuring constructs

related to both avoidance and mindfulness. Mindfulness is described as being attentive to and aware of what is going on in the present moment and is associated with acceptance and understanding of one's feelings, thoughts, and emotions (Brown & Ryan, 2003). Mindfulness has been found to negatively correlate with measures of avoidance (Baer et al., 2006). We expect that constructs such as experiential avoidance and thought suppression will be positively correlated with non-specific memories, and constructs such as mindfulness will be negatively correlated with such memories. Fourth, we sought to test the hypothesis that avoidance mediates the link between OGM and depression. Such a finding would support the emotion regulation hypothesis of OGM.

Method

Participants

125 undergraduate students at the Ohio State University participated in this study. The participants were predominately college freshmen enrolled in Psychology 100. Participants took pre-screening tests measuring Positive and Negative Affectivity, as measured by the Positive Affect Negative Affect Scale (T-PANAS; Watson, Clark, & Tellegen, 1988) and Effortful Control, as measured by shortened versions of the Attentional Control Scale (ACS; Derryberry & Reed, 2002) and the Effortful Control Scale (ECS; Lonigan, 1998). Students in the upper and lower quartile of negative affectivity and effortful control, demonstrating the highest and lowest measures of these constructs, were invited to participate, with the hopes that extremes would be overrepresented. Additionally, a random sample of others who took the prescreening measures were also invited to participate in the study. The final sample included 50 male and 75 female participants. Students were given credit for an introductory psychology course for participating.

Measures

Autobiographical Memory Test (AMT; Williams & Broadbent, 1986)

This written version of the AMT comprises 10 cue words probing for past experiences. The cue words are feelings, which include *happy*, *clumsy*, *surprised*, *angry*, *interested*, *sorry*, *successful*, *hurt*, *safe*, and *lonely*. The participant was asked to write down a specific memory of an event in which the participant felt the feeling described. The participants were told that the memories they write down should describe an event that lasted no longer than a day, and they should write down a different memory for each word. Examples of specific and non-specific memories were given in the instructions. The written memories were then coded as being either specific or non-specific. Memories coded as *specific* referred to a particular event that lasted less than one day. Memories coded as *non-specific* were coded as either categoric, referring to an event that happened on more than one occasion (e.g., "When I visit my parents on the weekends") or extended, referring to an event that lasted for longer than a day (e.g., "When I went on vacation for a week in Florida"). Additionally, experimenters coded "no memory" when participants either failed to write down a memory or used the same memory more than once, or "no response" when the participant did not write anything. Four different raters coded the AMTs. Each rater wrote down a number for each participant (between 1 and 10) denoting the number of specific memories. Raters also wrote down the number of categoric and extended memories for each participant.

Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996)

The BDI-II is a 21-item self-report measure of depressive thoughts, feelings, and behavior. For each item, participants choose between four alternatives of varying severity that

describes how they felt during the past two weeks. Higher scores indicate more severe depression. Previous research has shown good psychometric properties (Beck, Steer, & Brown, 1996).

White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994)

The WBSI is a 15-item self-report measure of thought suppression, which is defined as the tendency to deliberately try to avoid thinking about unwanted thoughts. The items are rated on a 5-point Likert scale, from 1 (*strongly disagree*) to 5 (*strongly agree*). Items are focused on the individual's ability to control specific thoughts (e.g., "I have thoughts that I cannot stop", "There are things I try not to think about"). Higher scores are associated with the use of more thought suppression. Research has shown that the WBSI demonstrates predictive validity and reliability (Wegner & Zanakos, 1994).

Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004)

The AAQ is a 9-item self-report measure of experiential avoidance, the phenomenon that occurs when individuals take steps to avoid unwanted emotions, thoughts, and memories. The items are rated on 7-point Likert scale from 1 (*never true*) to 7 (*always true*), and are designed to assess need for cognitive control, avoidance of negative events, inability to take action before or during these events, and forms of cognitive entanglement, such as excessively negative evaluations of experience (Hayes et al., 2004). Examples of items include "I often catch myself daydreaming about things I've done and what I would do differently next time" and "When I compare myself to other people, it seems that most of them are handling their lives better than I

do." Higher scores indicate more experiential avoidance. Research has shown good internal consistency, temporal stability, and validity of the AAQ (Boelen & Reijntjes, 2008).

Facets of Mindfulness Questionnaire (FMQ; Baer et al., 2006).

The FMQ is a 39-item self-report measure of mindfulness, defined as the awareness and acceptance of present experiences. The FMQ has five subscales that measure five facets of mindfulness. The facets of mindfulness include nonreactivity to inner experience (Nonreactivity), observing, noticing, and attending to sensations, perceptions, thoughts, and feelings (Observe), acting with awareness, concentration, and nondistraction (Aware), describing or labeling with words (Describe), and nonjudging of experience (Nonjudging). An example of a question on the Nonreactivity scale is, "I perceive my feelings and emotions without having to react to them." An example of an item on the Observe scale is "I pay attention to sensations, such as the wind in my hair or the sun on my face." An example of an item on the Aware scale (reversed) is "I am easily distracted." An example of an item on the Describe scale is "I'm good at finding the words to describe my feelings." An example of an item on the Nonjudging scale (reversed) is "I tell myself I shouldn't be feeling the way I am feeling." The items are rated on a 5-point Likert scale, ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*). Higher scores on all scales are associated with more mindfulness and less avoidance. Research has shown reasonable psychometric properties (Baer et al., 2006).

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004)

The DERS is a 36-item self-report measure of emotion dysregulation. Subscales include nonacceptance of emotional responses (Nonacceptance), difficulties engaging in goal-directed

behavior (Goals), impulse control difficulties (Impulsivity), lack of emotional awareness (Awareness), limited access to effective emotion regulation strategies (Strategies), and lack of emotional clarity (Clarity). For the purposes of this study we are especially interested in the Nonacceptance, Awareness, and Strategies scales. An example of an item on the Nonacceptance scale is "When I'm upset, I feel guilty for feeling that way." An example of an item on the Awareness scale is "When I'm upset, I acknowledge my emotions" (reversed for scoring purposes). An example of an item on the Strategies scale is "When I'm upset, I believe that I will remain that way for a long time." The items are rated on a 5-point Likert scale, ranging from 1 (*almost never; 0-10%*) to 5 (*always, 91-100%*). Higher scores indicate greater difficulties in emotion regulation. Research has shown high internal consistency, good test-retest reliability, and adequate construct and predictive validity (Gratz & Roemer, 2004).

Thought Control Questionnaire (TCQ; Wells & Davies, 1994)

The TCQ is a 30-item self-report measure of habitual strategies to control one's unwanted thoughts. Five subscales include Distraction (Distract), Punishment (Punish), Reappraisal, Worry, and Social Control. We are particularly interested in the Distraction and Punishment scales. Items all begin with "When I experience an unpleasant/unwanted thought…" and are rated on a 4-point Likert scale, ranging from 1 (*never*) to 4 (*almost always*). An example of an item on the Distraction scale is "I think pleasant thoughts instead." An example of an item on the Punishment scale is "I get angry at myself for having the thought." Higher scores indicate more use of maladaptive strategies to control unwanted thoughts. Research has shown moderately high internal consistency (Wells & Davies, 1994).

Procedure

In the context of a larger study, participants completed questionnaires in three sessions that occurred 2-3 weeks apart. This study is concerned only with the final two sessions. Participants gave informed consent at the start of the study. During the second session, participants completed self-report questionnaires including the White Bear Suppression Inventory (WBSI), the Acceptance and Action Questionnaire (AAQ), the Facets of Mindfulness Questionnaire (FMQ), the Difficulties in Emotion Regulation Scale (DERS), and the Thought Control Questionnaire (TCQ), which were randomly grouped with other questionnaires in a large packet. During the third session, participants completed the Autobiographical Memory Test (AMT) and the Beck Depression Inventory-II (BDI-II), along with other questionnaires not directly related to this study. The AMT was given first, before participants were given the other questionnaires. These other questionnaires were grouped randomly. Experimenters read the instructions to the participants to make sure the participants clearly understood how to complete the AMT. Experimenters were one doctoral student and eight undergraduate research assistants.

Results

Autobiographical Memory Test

Four raters coded the AMTs and recorded numbers (between 1 and 10) for specific, categoric, and extended memories for each participant. These recorded numbers of specific, categoric, and extended responses were averaged across raters. The intraclass correlations (reliabilities of the average score) were .87 for specific memories, .72 for categoric memories, and .78 for extended memories. Descriptive statistics, including mean scores and standard deviations for the AMT, are shown in Table 1.

Avoidance Questionnaires

Mean scores and standard deviations for avoidance questionnaires are shown in Table 1. Correlations for avoidance questionnaires are also shown in Table 1. Likely due to a lack of variance, zero-order correlations between specific memories on the AMT and avoidance measures were not significant. Because numbers of specific, categoric, and extended responses on the AMT were highly correlated with one another, we decided to control for number of specific responses and look specifically at the number of categoric responses. This decision stemmed from a focus in the literature on the association between categoric memories and depression. Therefore, we looked at semi-partial correlations between avoidance measures and categoric responses on the AMT while controlling for the number of specific responses.

Formation of suppression composite

Because multiple measures were used to test the construct of interest, an avoidance composite score was created. The advantages to creating a composite score include increasing reliability and validity of the construct of interest and decreasing the family wise error rate (Cook & Campbell, 1979; Rushton, Brainerd, & Pressley, 1983). Due to a fairly small sample, we had reduced statistical power and therefore created a composite in order to increase this power. When the error rate is decreased, the confidence intervals are narrowed and there is a better chance of finding significant effects in a small sample. The composite was created by averaging standardized raw scores across measures of each construct. The avoidance composite was represented by the average of z-scores for the White Bear Suppression Inventory (WBSI), the Acceptance and Action Questionnaire (AAQ), the Nonjudging, Aware, and Describe scales of

the Facets of Mindfulness Questionnaire (FMQ), the Punishment scales of the Thought Control Questionnaire (TCQ), and the Nonacceptance and Strategies scales of the Difficulties in Emotion Regulation Scale (DERS). This avoidance composite shows high reliability ($\alpha = .91$).

Association between memory specificity and depression

When controlling for number of specific responses on the AMT, the semi-partial correlation between categoric responses on the AMT and scores on the BDI-II was significant ($p = .04$).

Association between memory specificity and avoidance

When controlling for number of specific responses on the AMT, semi-partial correlations between categoric responses on the AMT and responses to avoidance questionnaires are shown in Table 2.

Association between depression, memory specificity, and avoidance: A meditational model

Our hypothesis states that avoidance, as measured by the avoidance composite score, mediates the link between OGM, as measured by categoric responses on the AMT, and depression, as measured by the BDI-II scores from session three. A mediational model requires four steps according to Baron and Kenny (1986). First, categoric responses on the AMT must be significantly correlated with BDI-II scores. With depression as the DV, a significant amount of variance in categoric memories was accounted for ($p = .02$). Second, categoric responses must be significantly predictive of avoidance. With avoidance as the DV, a significant amount of variance in categoric memories was accounted for ($p = .01$). Third, after controlling for categoric

responses, avoidance must be significant correlated with depression. With depression as the DV, when avoidance was added to the base model subsequent to categoric responses, it accounted for a significant amount of variance ($p < .01$). Fourth, the association between categoric responses and depression must be rendered non-significant by the addition of avoidance to the model, which was found ($p = .68$).

Because our variables were not normally distributed (perhaps due to the fact that our sample was non-clinical), we used a bootstrapping approach to ensure that our test of mediation did not rely on assumptions of normality. Bootstrapping is accomplished by taking a large number of samples of the original sample size and sampling with replacement, then computing the indirect effect in each sample (Preacher and Hayes, 2004). This allowed us to derive confidence intervals to ensure that the indirect effect is significantly different than zero. We found that the indirect path of OGM on depression through avoidance is 3.44. The 95% confidence interval ranges from 1.49 to 6.42. Because the confidence interval does not include zero, we can conclude that the indirect effect is indeed significantly different from zero at $p < .05$ (two tailed). Therefore, results supported a full mediational model in which avoidance mediates the relationship between OGM and depression. See Figure 1 for a diagram of this model.

It is important to note that this mediational model includes variables collected at two different time points. Avoidance measures that went into the avoidance composite score were measured during session two, while the AMT and BDI-II were measured during session three, which occurred 2-3 weeks after session two. We did not view this as a problem in our mediational model, however, because of the high test-retest reliability of all the avoidance measures used.

Discussion

In the current study, the relationship between overgeneral memory, depression, and avoidant coping methods was examined. Our first hypothesis was that we would replicate the basic effect of a positive correlation between overgeneral memory and depression. This hypothesis was supported by the results, as we found a significant correlation between number of categoric memories on the AMT and scores on the BDI-II. Second, we predicted that we would replicate the findings of Hermans et al. (2005) and find relationships between overgeneral memory and use of avoidant emotion regulation strategies, including thought suppression and experiential avoidance. We did find a significant correlation between categoric responses on the AMT and the White Bear Suppression Inventory (WBSI), which measures thought suppression. We did not, however, find a significant correlation between categoric responses on the AMT and our measure of experiential avoidance, the Acceptance and Action Questionnaire (AAQ). Third, we expected to extend the findings of Hermans et al.'s (2005) study by looking at additional avoidance measures. We found evidence that overgeneral memory is related to avoidant coping methods due to significant correlations between categoric responses on the AMT and the Describe scale of the Facets of Mindfulness Questionnaire, the Strategies scale of the Difficulties in Emotion Regulation Scale, and the Punishment scale of the Thought Control Questionnaire. In addition, we found a significant correlation between categoric responses on the AMT and our avoidance composite score. These results suggest that those who have reduced autobiographical memory specificity also use avoidant emotion regulation strategies to cope with negative thoughts and emotions. Last, we predicted that avoidance would mediate the relationship between overgeneral memory and depression, and this hypothesis was supported by results.

Overall, results provide support for our hypotheses. Overgeneral memory is associated with depression, and that association is a function of self-reported avoidant tendencies. These findings enhance confidence in Hermans et al. (2005) because we have replicated the results with a larger sample size and more balanced sample of men and women. Furthermore, despite having low statistical power due to a lack of variance of non-specific responses on the AMT, we still found evidence for a mediational model in which avoidant tendencies mediate the link between reduced memory specificity and depression. The therapeutic implications of this study suggest benefits of mindfulness-based treatments of depression that focus on acceptance of thoughts and emotions and a reduction of avoidant tendencies.

A number of limitations in this study should be noted. First, we used a written version of the Autobiographical Memory Test. This version has only been used in one other study to our knowledge (Hermans et al., 2005) and its reliability and validity have not been extensively tested. Many other studies have used an interview version of the test when measuring overgeneral memory. Interview tests have the distinct advantage of allowing experimenters to probe further when participants give a memory that is unclear. The written format did not have this luxury and it was therefore more difficult to code the AMTs because some responses were ambiguous. This limitation also might help explain why we had so little variance on the AMT and such a skewed distribution. It should also be noted that we used a non-clinical sample of college students so we did not have a sufficiently depressed sample. This may also explain our lack of variance, perhaps combined with the use of the written version of the AMT.

Our study was also correlational and therefore we cannot make any causal claims based on our data. Also, the directionality of the relationships between variables is unclear. Although our data was collected at two different points in the quarter, we treated this study as a cross-

sectional one due to the very short amount of time between data collection (2-3 weeks) and the high test-retest reliability of the measures used. Therefore, we do not know whether depression predicts overgeneral memory or vice versa.

Future studies attempting to examine the relationship of overgeneral memory and avoidance should make a few adjustments to the current study. First, a longitudinal design would allow researchers to determine the direction of the effects. If we could determine precisely where avoidant strategies fit into the model, there are more specific therapeutic implications in terms of how to treat depression. Second, the use of a clinical sample may yield more variability in the data and thus produce stronger results. Third, an interview form of the AMT may be a better indicator of overgeneral memory than the written form used in this study. It would also be helpful to study the psychometric properties of the written version of the AMT. These changes would allow researchers to gain a better understanding of how overgeneral memory works, especially in regards to avoidant tendencies.

References

Baer, R., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self report assessment methods to explore facets of mindfulness. *Assessment, 13,* 27-45.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality & Social Psychology, 51,* 1173-1182.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). Manual for the Beck Depression Inventory-II. San Antonio, TX: Psychological Corporation.

Boelen, P.A., & Reijntjes, A. (2008). Measuring Experiential Avoidance: Reliability and Validity of the Dutch 9-item Acceptance and Action Questionnaire (AAQ). *Journal of Psychopathology and Behavioral Assessment, 30,* 241-251.

Brittlebank, A. D., Scott, J., Williams, J. M. G., & Ferrier, I. N. (1993). Autobiographical memory in depression: State or trait marker? *British Journal of Psychiatry, 162,* 118-121.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84,* 822-848.

Conway, Martin A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, 107, 261-288.

Cook, T. D., & Campbell, D. T. (1979). Quasi-experimentation: Design and analysis issues for field settings. Boston: Houghton Mifflin.

Croll, S., & Bryant, R. A. (2000). Autobiographical memory in postnatal depression. *Cognitive Therapy & Research, 24,* 419-426.

Derryberry, D., & Reed, A. (2002). Anxiety-related attentional biases and their regulation by attentional control. *Journal of Abnormal Psychology, 111,* 225-236.

Goddard, L., Dritschel, B., & Burton, A. (1997). Social problem solving and autobiographical memory in non-clinical depression. *British Journal of Clinical Psychology, 36,* 449-451.

Gratz, K. L., & Roemer, L. (2004). Multidimensional Assessment of Emotion Regulation and Dysregulation: Development, Factor Structure, and Initial Validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment, 26,* 41-54.

Hayes, S. C., Strosahl, K., Wilson, K. G., Bissett, R. T., Pistorello, J., Toarmino, D., et al. (2004). Measuring experiential avoidance: A preliminary test of a working model. *The Psychological Record, 54,* 553-578.

Hermans, D., Defranc, A., Raes, F., Williams, J. M. G., & Eelen, P. (2005). Reduced autobiographical memory specificity as an avoidant coping style. *British Journal of Clinical Psychology, 44,* 583-589.

Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress. *Psychosomatic Medicine, 41,* 209-218.

Iqbal, Z., Birchwood, M., Hemsley, D., Jackson, C., & Morris, E. (2004). Autobiographical memory and post-psychotic depression in first episode psychosis. *British Journal of Clinical Psychology, 43,* 97-104.

Kaney, S., Bowen-Jones, K., & Bentall, R. P. (1999). Persecutory delusions and autobiographical memory. *British Journal of Clinical Psychology, 38,* 97-102.

Kuyken, W., & Brewin, C. R. (1995). Autobiographical memory functioning in depression and reports of early abuse. *Journal of Abnormal Psychology, 104,* 585-591.

Lonigan, C. J. (1998). Development of a measure of effortful control in school-age children. Unpublished raw data. Florida State University.

Mackinger, H. F., Loschin, G. G., & Leibetseder, M. M. (2000). Prediction of postnatal affective changes by autobiographical memories. *European Psychologist, 5,* 52-61.

Mackinger, H. F., Pachinger, M. M., Leibetseder, M. M., & Fartacek, R. R. (2000). Autobiographical memories in women remitted from major depression. *Journal of Abnormal Psychology, 109,* 331-334.

Moffitt, K. H., Singer, J. A., Nelligan, D. W., Carlson, M. A., & Vyse, S. A. (1994). Depression and memory narrative type. *Journal of Abnormal Psychology, 103,* 581-583.

Ottenbreit, N. D., & Dobson, K. S. (2004). Avoidance and depression: The construction of a Cognitive-Behavioral Avoidance Scale. *Behaviour Research and Therapy, 42,* 293-313.

Raes, F., Hermans, D., Decker, A., Eelen, P., & Williams, J. M. G. (2003). Autobiographical memory specificity and affect regulation: An experimental approach. *Emotion, 3,* 201-206.

Ramponi, C., Barnard, P. J., & Nimmo-Smith, I. (2004). Recollection deficits in dysphoric mood: An effect of schematic models and executive mode? *Memory, 12,* 655-670.

Rushton, J. P., Brainerd, C. J., & Pressley, M. (1983). Behavioral development and construct validity: The principle of aggregation. *Psychological Bulletin, 94,* 18-38.

Scott, J., Stanton, B., Garland, A., & Ferrier, I. N. (2000). Cognitive vulnerability in patients with bipolar disorder. *Psychological Medicine, 30,* 467-472.

Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research, 27,* 247-259.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070.

Wegner, D. M., & Zanakos, S. (1994). Chronic Thought Suppression. *Journal of Personality, 62,* 615-640.

Wells, A., & Davies, M. I. (1994). The Thought Control Questionnaire: A measure of individual differences in the control of unwanted thoughts. *Behavior Research and Therapy, 32,* 871-878.

Williams, J. M. G., Barnhofer, T., Crane, C., Hermans, D., Raes, F., Watkins, E., & Dalgleish, T. (2007). Autobiographical memory specificity and emotional disorder. *Psychological Bulletin, 133,* 122-148.

Williams, J. M. G., & Broadbent, K. (1986). Autobiographical memory in suicide attempters. *Journal of Abnormal Psychology, 95,* 144-149.

Williams, J. M. G., Ellis, N.C., Tyers, C., & Healy, H. (1996). The specificity of autobiographical memory and imageability of the future. *Memory & Cognition, 24,* 116-125.

Table 1. Descriptive statistics and correlations for AMT, avoidance measures, and suppression composite

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	*M*	*SD*
1. AMT specific	(.87)																	9.01	1.04
2. AMT categoric	-.66**	(.72)																0.34	0.64
3. AMT extended	-.80**	.25**	(.78)															0.60	0.63
4. BDI (T3)	.02	.13	-.20*	(.94)														9.41	9.54
5. WBSI	.02	.17	-.20*	.55**	(.89)													44.16	13.31
6. AAQ	-.05	.14	-.12	.69**	.76**	(.88)												33.55	8.67
7. FMQ nonreact	.13	-.19*	-.02	-.46**	-.45**	-.60**	(.84)											19.99	5.46
8. FMQ aware	-.10	-.07	.24**	-.60**	-.60**	-.63**	.40**	(.91)										21.12	6.27
9. FMQ describe	.13	-.23*	-.02	-.22**	-.36**	-.40**	.30**	.31**	(.93)									26.40	6.81
10. FMQ nonjudging	.00	-.12	.15	-.59**	-.69**	-.75**	.31**	.51**	.26**	(.89)								17.70	7.60
11. DERS nonaccept	.02	.11	-.14	.62**	.61**	.73**	-.42**	-.52**	-.22*	-.76**	(.89)							11.44	5.96
12. DERS awareness	-.03	-.01	.09	-.16	-.12	-.21*	.12	.27**	.48**	.15	-.03	(.81)						19.86	4.61
13. DERS strategies	.00	.15	-.15	.67**	.66**	.75**	-.49**	-.48**	-.19*	-.73**	.83**	.03	(.89)					16.85	6.20
14. TCQ distract	.09	-.05	-.02	-.35**	-.27**	-.37**	.26**	.27**	.14	.31**	-.27**	.17	-.34**	(.76)				15.34	3.26
15. TCQ punish	.04	.15	-.12	.48**	.55**	.66**	-.34**	-.42**	-.20*	-.65**	.68**	-.06	.62**	-.05	(.90)			8.68	2.44
17. Avoidance comp	.01	.19*	-.19*	.72**	.84**	.91**	-.54**	-.71**	-.47**	-.86**	.86**	-.20*	.84**	-.32**	.77**	(.91)			

Note: *p < .05, **p < .01, two tailed. Reliabilities are shown on the diagonal. For AMT specific, categoric, and extended, intraclass correlation coefficients are shown on the diagonal (reliability of the average score between raters).

Table 2. Semi-partial correlations between responses on the AMT and avoidance measures

	AMT Categoric
WBSI	.182**
AAQ	.104
FMQ nonreactivity	-.099
FMQ aware	-.128†
FMQ describe	-.138*
FMQ nonjudging	-.120†
DERS nonacceptance	.127†
DERS awareness	-.029
DERS strategies	.146*
TCQ distraction	.013
TCQ punishment	.177**
Avoidance comp	.179**

*p < .05; **p ≤ .01; † p < .07

Note: Semi-partial correlations reflect models controlling for number of specific memories

Figure 1. Mediational model of the association between reduced memory specificity and depression by avoidance. All values are standardized regression coefficients (ßs). Total effect of IV on DV is shown above the arrow. Direct effect is shown below the arrow.